WHAT IS CLAIMED IS:

1. An Ethernet switch comprising:

a plurality of network ports, for receiving or delivering network packets;

a first memory device, for storing the source address and associated messages of said network packets;

a second memory device, for storing the data of the network packets received by the network ports;

a first memory control device, connected to said first memory device, for controlling the read and write of said first memory device;

a second memory control devices, connected to said second memory device, for controlling the read and write of said second memory device;

an switch device, connected to said plural network ports and said first memory control device, for creating a source address and associated messages of said network ports, creating a destination address and associated messages of said network port for said network packets in accordance with the contents of said first memory device, and managing the contents of said first memory device; and

a second memory management device, connected to said plural network ports and said second memory control device, for managing the contents of said second memory device.

2. The Ethernet switch of Claim 1, wherein said network ports comprise a first network port and a second network port.

1   3. The Ethernet switch of Claim 1, wherein said network
2   ports comprise media independent interfaces, for connecting
3   to local area networks (LAN) of various specifications.

1   4. The Ethernet switch of Claim 2, wherein said first
2   network port and said second network port comprise media
3   independent interfaces, for connecting to local area network
4   (LAN) of various specifications.

    5. The Ethernet switch of Claim 1, wherein said switch
2   device comprises an initiation module, for resetting the
3   contents of said first memory device.

1   6. The Ethernet switch of Claim 1, wherein said switch
2   device comprises an aging module, for attenuating the expiry
3   of the contents of said first memory device.

1   7. The Ethernet switch of Claim 1, wherein said switch
2   device comprises
3   a packet switch routing learning module and a packet
4   switch routing selecting module;
5   wherein, said packet switch routing learning module
6   searches for the contents of said first memory device in
7   accordance with the source address of said network packets,
8   for creating or updating an index for recording the source
9   addresses of said network packets and their links with said
10 plural network ports; and
11   said packet switch routing selecting module searches
12 for the contents of said first memory device in accordance
13 with the destination addresses of said network packets, for

14   obtaining said corresponding network ports, and for
15   transporting or filtering said network packets.

1   8. The Ethernet switch of Claim 1, wherein said switch
2   device comprises packet switch processing arbitrating
3   module, for arbitrating the network packet switch processing
4   order of said network packets received from said plural
5   network ports.

1   9. A method of switching network packet for the
2   Ethernet switch, comprising:
3   providing a routing table made up of plural indices,
4   for recording the source address of said packet and the
5   messages associated with said network port;
6   providing a route learning device, responding to the
7   source address of said packet and the content of said
8   routing table, for creating a new index of said routing
9   table or updating an index of said routing table; and
10   providing a route selecting device, responding to the
11   destination address of said packet and the content of said
12   routing table, for determining the link between the
13   destination of said packet and said network port.

1   10. The method of switching packet for the Ethernet
2   switch of Claim 9 further comprising:
3   providing a route resetting device, for resetting
4   the content of said routing table.

1   11. The method of switching packet for the Ethernet
2   switch of Claim 9 further comprising:

3   providing a routing table index expiry attenuating
4   device, for attenuating the content of said routing table.

1   12.   The method of switching packet for the Ethernet
2   switch of Claim 9 further comprising:
3   providing a route learning and selection
4   arbitrating device, for arbitrating the network packet
5   switch processing order of said network packet received from
6   said plural network port.

1   13.   The method of switching packet for the Ethernet
2   switch of Claim 9 further comprising:
3   providing an age index, a source port number, an
4   address flag, and an ID pattern in said index.

1   14.   The method of switching packet for the Ethernet
2   switch of Claim 9, wherein said route learning device
3   performs the following steps upon creating an index of said
4   routing table or updating an index of said routing table:
5   a) set a address flag as the first address flag, set
6   a search index address as the first index address, set an ID
7   pattern as the first ID pattern, set the source network port
8   as the first network port, and set an effective age index
9   range as the first age index range;
10   b) read said index in accordance with the first
11   index address on said routing table;
12   c) compare the age index of said index to determine
13   whether it is within the range of the first age index;
14   d) compare the source network port number, address
15   flag, and ID pattern of said index, to determine whether
16   they are identical to the first network port, the first

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17 address flag, and the first ID pattern; and

18   e) determine the source port number of said index

19 and its relation with the source address of said network

20 packet, in response to the outcomes of steps (c) and (d).

1   15. The method of switching packet for the Ethernet

2 switch of Claim 9, wherein said route selecting device

3 performs the following steps upon determining the link

4 between the destination of said packet and said network

5 port:

6   a) set a address flag as the second address flag,

7 set a search index address as the second index address, set

8 an ID pattern as the second ID pattern, set the source

9 network port as the second network port, and set an

10 effective age index range as the second age index range;

11   b) read said index in accordance with the second

12 index address on said routing table;

13   c) compare the age index of said index to determine

14 whether it is within the range of the second age index;

15   d) compare the source network port number, address

16 flag, and ID pattern of said index, to determine whether

17 they are identical to the second network port, the second

18 address flag, and the second ID pattern; and

19   e) determine the source port number of said index

20 and its relation with the destination address of said

21 network packet, in response to the outcomes of steps (c) and

22 (d).